

Lesson 1

- Biological Hierarchy:
 - Atoms – Smallest unit of matter retaining characteristic chemical properties (ex: H = Hydrogen)
 - Molecules – Atoms Bonded together in specific arrangement (ex: H₂O = Water)
 - Organelles – Molecules that are a functional unit (ex: Nucleus)
 - Cells – Lowest level capable of all functions which determine / define a living organism
 - Tissues – Cells organized into a functional unit (ex: Skin, Muscle)
 - Organs – Tissues organized into a functional unit (ex: muscle tissue → heart organ)
 - Organ System – Organs organized into a functional unit (heart organ → cardiovascular system)
 - Organism
- Cell theory (must meet this criteria)
 - All living things are composed of cells
 - The cell is the basic fundamental unit of life
 - Cells arise from pre-existing cells
 - Cells carry DNA from parent to offspring
- Types of Cells
 - Prokaryotic
 - Bacteria
 - Archaea
 - Eukaryotic
 - All other forms of life including, plants, animals, and bugs
- Prokaryotes
 - Includes all bacteria
 - Their outer cell wall does not enclose any membrane bound organelles. Meaning in the cell wall itself there are very little organelles
 - DNA is concentrated in an area called the **Nucleoid** region, but is not separated from the rest of the cell.
 - They have an ability to carry other pieces of genetic information
 - **All** bacteria contain:
 - A cell membrane / cell wall
 - Cytoplasm
 - Some have flagella (motorization)
- Eukaryotes
 - Contains internal organelles that are membrane enclosed, has membrane bound organelles

Prokaryotes	Both	Eukaryotes
No membrane bound Nucleus	Have DNA	Have a membrane bound nucleus
Does not have membrane bound organelles	Have Ribosomes = they make proteins	Has membrane bound organelles
Single Celled	Have Cytoplasm “fluid in the plasma membrane”	Single Celled or Multicellular
	Have a Plasma Membrane = Cell wall = “outer wall”	